



Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

NANOTECHNOLOGY RESEARCH TEAM EARNS AFOSR'S STAR TEAM AWARD



The selection of Dr. Richard Vaia's Nanostructured Polymers and Nanocomposites Team for an Air Force Office of Scientific Research (AFOSR) Star Team Award recognizes group and individual achievement and highlights the contributions of the Materials and Manufacturing Directorate. Their selection exemplifies the technical expertise, professionalism, and dedication of the men and women of the directorate and enhances the organization's key role as a center of excellence in nanotechnology and materials research and development.



Air Force Research Laboratory
Wright-Patterson AFB OH

Materials and Manufacturing
Awards and Recognition

Accomplishment

The directorate's Nanostructured Polymers and Nanocomposites Team, led by Dr. Vaia, earned an AFOSR Star Team Award for important contributions to the Air Force and national defense. The award recognizes teams of researchers who demonstrate world-class status and excellence in their chosen areas of research.

AFOSR recognized Dr. Vaia's team for helping to create a fundamental knowledge base required to develop polymer-based nanostructured materials' technologies for a diverse range of Air Force applications. Their research expands the understanding needed to establish predictable structure-processing-property relationships for polymer-based nanostructured materials and also helps demonstrate the feasibility of using these revolutionary materials to address unique military needs.

Background

The Star Team Award fosters excellence throughout the research community and highlights the critical role of basic research within the Air Force's broad technology spectrum. AFOSR recognized the Nanostructured Polymers and Nanocomposites Team for advancing the fundamental knowledge base required for the intelligent selection, design, and utilization of nanostructured polymer and nanocomposite materials used to support Air Force objectives. This knowledge base encompasses coordinated efforts in theory and modeling, successful development of cost-effective synthesis and fabrication schemes that users can tailor to match specific needs, clarification of structure-processing relationships, and determination of value-added properties such as shape-recovery, random lasing, and self-passivation.

Team members included Dr. Vaia, Dr. Hilmar Koerner, Dr. Rachel Jakubiak, Dr. Fatma Vatansever, Dr. Wansoo Hsu (a visiting scientist and professor from South Korea), Dr. Mark Pender, Dr. Kelly Anderson, Mr. Shane Juhl, Ms. Abigail Cooley, and Mr. Gary Price. Student participants included Mr. Nate Pearce, Mr. Dean Brown, and Mr. Dave Jacobs. Key government collaborators (and their groups) included Dr. Tim Bunning and Dr. Morley Stone, of the directorate's Survivability and Sensor Materials Division; Mr. Max Alexander and Dr. Loon-Seng Tan, of the directorate's Nonmetallic Materials Division; and Dr. Barry Farmer, the directorate's chief scientist.

The potential military utility for nanostructured polymer and nanocomposite materials is vast, ranging from the ground soldier to satellite systems. Potential applications include plastic propellant storage tanks; elastomeric conductive caulks; high-strength, conductive matrix resins for space structures; flexible conductive films for radar substrates; next-generation matrix resins for aircraft; space durable, lightweight films and structures; and reconfigurable space membranes for antennas, solar collectors, and space-based radar.

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-ML-36)